

# THE DAWN OF COMMON SCHOOL METHODS;

OR PESTALOZZI THE DISCIPLE OF ROUSSEAU AND INSPIRER OF THE HERBARTIAN SYSTEM.

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The Dawn of Modern Common School Methods, or  
Pestalozzi, the Disciple  
of Rousseau and Inspirer of the Herbartian System.

Among educational thinkers great differences appear as to what should be the scope and aim of education. The opinions most interesting to us at present are those of the three pedagogists under discussion in this paper.

Rousseau, in his "Emile", declares that "the only habit that a child should be allowed to form is that of not contracting any habit. Prepare for him the mastery of his liberty and the use of his faculties by leaving to his body his natural habitude, by putting him in a condition to always be master of himself and to do his will in all things so long as he has a desire." Pestalozzi and Herbart, on the other hand, think that the formation of habits is the all-important object of education, their views differing in this: Pestalozzi thinks that habits should be formed in youth, but that they should be of such a character that no matter what the after-life may be, they will not have to be changed.

Herbart compares the mind with a plant. He says that the plan of



the mind is not like that of a plant, for if it were, circumstances would only favor or check its growth. The office of education is not to supervise or tend the training of the mind as a gardener tends his plants, but on the other hand, education should give to the mind such material as will aid in forming presentations, these presentations in turn forming habitude.

Concerning the value and limits of education, however presented, there has been a great variety of opinions. Radestock, in his "Habit in Education", gives the opinions of several well-known educators who take a stand midway between those who believe education can do nothing and those who believe it can do everything. Lessing in his "Education of Mankind" and Rosenkranz express in very similar language, this thought: "Education can only develop and unfold; it cannot create anything new". This means that man is endowed by nature with certain potentialities which may be developed or modified by education.

Amos Comenius, leader of the Realists at the time of the Reformation, believed in the power of education but thought it differed according to the temperament of the pupil; that education would be far more effective with bright, tractable pupils than with those who are studious but obstinate, while for those who are dull as well as stubborn, education may be almost useless.

The greatest value of education lies in its power to form habit.

What we need to form character or to make us well-educated is that which renders us skillful and quick and self-confident. These results are attained by habit, which changes functions of whatever kind, originally performed but slowly and with effort into rapid and skillful actions performed with dexterity and ease; it makes study much easier, and finally builds the bridge uniting theory and practice by changing dead knowledge into a living power.

The youth, having more mature judgment than the child, separates the good from the evil and assimilates what is acceptable. This separating and assimilating process is at first a step toward the formation of a habit, and later is the result of a habit already formed. The child, not having the necessary foundation for good judgment, is guided by the principles of the parent or teacher, but in youth these guides are removed and self-dependence is necessary. Now, if the principles of the parent have become a habit of the boy, his actions will be quick, decisive, and invariably according to principle, but if not impelled by habit his decisions will be slow and uncertain, wavering between right and wrong. Locke says, "we must expect nothing from precautionary maxims and good precepts, though they be deeply impressed on the mind, beyond the point at which practice has changed them to firm habits". Rousseau opposes the idea that Nature is nothing but the formation of habits, because many habits are contrary to nature, but he says that "Education



is certainly nothing but a formation of habits."

Niemeyer thinks children ought to be familiarized with habits of order and cleanliness, decency and politeness, because it will have a lasting effect on their inner life, -they take their first lessons in civilization in these matters. Evil habits are forgotten by disuse. The more rarely evil traits have an opportunity of appearing, the more the causes are removed by which they existed, the more they will lose their strength.

Theo. Fechner, one of the greatest scientists of today, says that "what was objected to at first, will often by several repetitions of the impression be endured, yea, received with pleasure, and its loss sadly felt." This shows a sort of adaptation of our inner organism to an attraction which is gradually called forth by the effect of the attraction itself. By practice, many a one will lose his predilection for what is coarse, and in its stead train a feeling of refinement.

Campe, the successor of Basedow, warns us against the confusion of the terms skill and propensity in connection with habit. It is true, that very frequently skill is accompanied by propensity, but skill may be present in a high degree in the absence of propensity, while on the other hand, there is often strong propensity without noticeable skill. To illustrate these possibilities he cites a galley slave as having great skill in rowing and an utter lack of propensity, and the young student of the piano who has an inclination to play but who has no

skill with which to execute his desire.

According to Herbart, man is made up of presentations, and these presentations added to one another, form habit. But he does not think that these habits can wholly change a man's character though they most certainly modify it. Man's nature is capable of perfectability but never reaches perfection. The degree of perfection depends upon the scope of the good presentations and the absence of bad habits.

In the first book of Rousseau's "Emile", which treats of childhood, the subject of habit appears to grow upon the author as the topic develops, and its importance is insisted upon with greater emphasis and amplitude. As illustrations of this Naturalistic position, the following utterances seem especially significant. Concerning the child, he says; "We either do what pleases him or we exact of him what pleases us; we either subject ourselves to his whims, or subject him to ours. Thus his first ideas are those of domination and servitude. It is thus that at an early age we pour into his young heart passions that we straightway impute to nature."

Not to quote his words but to give his thought, he commands the father to train the child instead of leaving it to ignorant nurses who will inculcate in him undesirable habits.

Both the parent and the tutor should try to gain the love rather than the fear of the child because one will readily adopt the thoughts and manners of those he loves.



The impressions gained in childhood are the most important, as they are the most vivid and the most easily retained. What is practiced in childhood and early youth gradually forms the character. At first sight character seems to be a much broader term than habit, making it incorrect to use the words as synonyms, but if we look a little farther we shall find that character is made up of habits, and of tendencies due to heredity. Habits may be divided into two classes, acquired and inherited, the latter attained by past generations and handed down to those now possessing the given tendencies. Therefore, the narrow meaning of habit as helping to form character refers to acquired rather than to inherited habits. Each action is the beginning of a habit and every subsequent action of a similar kind strengthens that habit.

Since this is true, great care should be taken that not one wrong action be permitted. Spencer says that memory is a habit founded on a cosmic law, which is strengthened by each repeated activity. Rousseau says that the only habit which a child should be permitted to acquire is this, that it habituate itself to nothing in particular. But, nevertheless, he as well as others thinks that the first thing a child should learn is absolute obedience to parents, because only by making this a habit will he cheerfully and habitually obey the laws of the nation.

In any field of action the scope should be neither too wide nor too



narrow. The main energies should be concentrated on that for which one has a talent, for in this manner firm habits rather than weak, scattered ones may be formed. It is true of physical as well as of intellectual action that habit is strengthened by concentration of power. "It is wide and varied interest that distinguishes the truly educated and mentally active person."

Spencer as does Pestalozzi, believes that accurate sense-perception the basis of all education, can be attained by a systematic training of the senses, broad enough to include every department of nature. Pestalozzi, in his essay "How Gertrude Taught her Children", says that we should develop children's minds (1) by continually widening the circle of their conceptions, (2) by impressing upon them the conceptions brought to their consciousness, (3) by giving them such knowledge of speech that they may converse on all that with which nature and art have made them acquainted.

Up to this point we have studied chiefly the results of habit upon the child and its education. We thus see that early habituation, by saving and strengthening power both of action and memory, prepares the student for higher studies. It may seem paradoxical to say that "habit lessens the narrowness of knowledge." But although it permits only a few conceptions to exist simultaneously in our consciousness, it brings these separate conceptions by their repetition, to greater clearness,

and also has the power to govern by successive apperception, a large circle of conceptions. Nevertheless, every extreme habituation has a harmful influence on the intellectual life by so narrowing the circle of conceptions that a man grows rusty in the old relations and views of things. Moreover, habits of thought may lead to extreme one-sidedness, causing many wrong decisions. One example of this danger is the mathematician who looks at everything in a mathematical way, drawing positive conclusions from facts which are only probable.

In the case of an older student, one who is employed with higher studies, practice makes him a master of intellectual activity, so that deep thinking and heavy reading become a recreation to him, and he so feels the need of employing his faculties that idleness causes unrest.

As a preparation for higher studies and for advance in learning, the cultivation of imagination is highly important. This faculty may be divided into Inductive and Deductive, and these may be subdivided into Intuitive and Combining imagination. Deductive Intuitive imagination is that shown in a talent for observing in every field, while the Inductive Combining faculty includes the talent for inventing. The Deductive Intuitive faculty is a talent for analyzing, as shown for example, in the systematic naturalist and geometrician. The fourth division, Deductive Combining imagination, includes the speculative talent which is possessed by the philosopher and mathematician; the philos-



opher having a preponderance of this faculty, the mathematician adding to it a preponderance of the analyzing intellect.

Spencer says, "Not by precept, though it be daily heard; not by example unless it be followed; but only through action which is often called forth by the relative feeling, can a moral habit be formed." This much is certain, a person whose will does not without effort appear the same whenever the cause is renewed, who must come back to his former resolve by contemplation, will have great trouble in forming his character. And it is because the natural perseverance of the will is not often found in children, that training has so much to do in forming it. There is a will memory as well as an intellectual memory. As the intellectual memory aids by calling up and combining in the right way the mental facts or habits, so the will memory aids by calling up moral habits and putting them in proper connection with the new conditions. The development of this memory is necessary for the formation of true character.

For this reason, Rousseau commands the father to educate his own children instead of leaving them to uncultured nurses and tutors. Association is of as much value to moral as to intellectual life. In a child if the incentives to evil cannot be removed, they may be forgotten if the attention be drawn to some pleasant game. In later years, an inclination toward wrong is conquered more easily by the introduction

of an opposing passion than by mere instruction; for though we can refute and conquer thoughts by thoughts, they are powerless against feelings as against the energy of personal will. Herbert Spencer says it is as impossible to engender better feelings by schooling the mental faculties as to teach geometry by lessons in Latin. The finer aesthetic, moral and religious feelings are possible only with a high development of ideas.

Lying is one of the commonest of bad habits and is formed in early childhood when children have no real sense of right and wrong. Rousseau thinks that the mania children have for destroying things is the result of a desire to see what is in or behind them, and their lying comes from the realities pictured to them by their imaginative powers. This habit carried into later life becomes wilful lying.

What in social life we call custom is nothing more than the habit of action of a large majority continued for several generations. To the differences in customs, in action and occupation, as well as to climate, is due the variation in national character. On account of this variation there are vast differences in the estimate of labor among diverse races. Roscher says, "the higher culture rises, the more honorable is labor, while barbaric nations despise it as slavish. Among all people the desire for praise is a very potent feature, but a child should learn to look upon the feeling of satisfaction which follows



every labor that has been well done as the best and only reward. A man should be accustomed to the enjoyment of life but not to a life of enjoyment.

Many persons believe there is great necessity for physical punishment in order to properly form the character; but this is injurious not only to moral action but also to mental. The moral sentiment gains nothing from constant punishment because habit dulls the feeling for chastisements even more than for rewards. Furthermore, the action of the mind is greatly hindered by all physical punishments, for every physical exertion spends energy which would otherwise be used in mental activity. As one writer says, "pain is a waste of brain power," and Comenius says that "blows and strokes have not the power to bring love of the sciences into the heads of children but may often cause a disgust for them."

Spencer, in "Education", discusses right and wrong methods of punishment saying that while artificial punishments inspire in the child rebellious feelings and a desire for revenge, nature's punishments teach the law of order and of cause and effect, preparing the child for better living. The natural method inspires higher feelings by showing the weakness of the low ones and this continuing, forms a strong habit of good character. High morality is of slow growth.

While habits are necessary to the development of intellect or

character, bad habits or any others carried to the extreme are very injurious to the emotions.

There are three theories concerning the emotions which we may well notice here. The first is, that emotions are a special action of the faculty of perception. 2, The emotions proceed from a reciprocal action of the conceptions, and 3, Emotions are the conditions in which the soul is placed by its conceptions and perceptions.

When an emotion has reached its highest power, its opposite often appears and eventually blots the other out of mind. This is the reason that the ideas of a nation rise and decay almost periodically. The most pleasant objects will become indifferent if we see them constantly without any change; so with our thoughts. Even religious thoughts weaken in strength if called upon too often.

However important we may consider habit, it is nevertheless its own worst enemy, because old habits oppose the introduction of new ones. Moreover, extreme habituation does not let the will activity come forward and changes all thoughts to mechanical ones; "robbing a man of his free self-determination makes a slave of him." Such a servile education creates only a series of good habits which being a means to morality and not the thing itself, often leaves a man, in extreme cases, in grave indecision. "What education wants is not a will so much as a will proceeding from the moral intelligence" and which gives a youth



the power to enjoy the liberty of self-decision.

But let us turn from the uses of habit for chiefly moral development to the necessity of habit in intellectual training.

Comenius and Pestalozzi were among the first educators to advocate the necessity of a natural development of subjects for instruction. They were among the first to desire that a child should begin with the easiest facts and gradually add new material to the old in such a manner that each new idea would be based on what was already assimilated. For this reason Rousseau, who as a theorist believed in this plan, was opposed to encouraging a child to talk when very young because he would use words which had no connection with facts already fixed in his mind, and hence would use words with entirely wrong meanings.

As it is with the emotions, so with the intellect, frequent changes are necessary to call forth the best mental exertion. It is quite noticeable that children easily tire if held to one study too long at a time, while if there are frequent intervals for play the mind when at work will perform its functions better for the change.

Genius, the highest culmination of mental activity, may be harmonized by habitude; for geniuses although having many thoughts closely united in the mind may be prevented by habit from forming new combinations of these ideas, which are the distinguishing marks of genius. Education has some bad effects on genius in that it tends to cause all people to look at things in the same way; but it is necessary for the

cultivation of habits of diligence and orderliness.

We have seen above that the development and retention of moral habits, if not firmly fixed in youth, require effort, but geniuses, employing their best power in mental effort leave the moral nature to develop of itself, often with unsatisfactory results.

Men of genius are those who create something new and raise the standard of education. But a man's greatness can not be judged by his contemporaries, and but poorly by the next generation; the truly great mind is that which remains alive through centuries, causing the future generations to accept its ideas and make them their own. There are great minds which develop theories, others which are capable of working out these theories in practice, but if these theories are influential in any way, the originating minds are great. But while the whole may be created by the enthusiasm of one great mind, its parts must be developed by the calm thought of that or some other great mind.

Genius and insanity are so closely related that persons predisposed to insanity may become, according to circumstances, insane or great in the advancing of new and helpful ideas. The only bulwark against such a tendency is a good education which gives one a feeling of respect for authority and existing conditions, while if this is lacking the attempt to free one's self from circumstances will cause insanity.



If, as has often been stated, the great secret of human perfection lies concealed in education, it is not strange that its history furnishes so many examples of self-sacrificing devotion and lofty purpose. While one might easily be tempted to overrate the power of education, it has not always achieved in individuals the end it had in view. Whether we have yet attained a system of education completely suited to the needs of human development is still an unsettled question.

Up to the present time the Herbartian system is the only one that has been fully and concisely presented. To show the relation of this system to the educational doctrines that preceded it, will be the further aim of this discussion.

Pestalozzi, the master of Herbart, had thought only for the education of the masses in the lower grades of instruction. Herbart and Spencer, though indebted to Pestalozzi, advance beyond the master, planning for a higher education than the masses receive. This difference in standpoint must be kept in mind in order to see why Pestalozzi's method seems to us, tasteless and stiff in content, and clumsy and rough in design. He gives only that instruction which is of prime necessity. According to his method the work would be of such a character as to require nothing to be added by the teacher, the child memorizing everything as it is found in the book. Pestalozzi, therefore, omits those

higher branches of study which in advanced education are deemed essential. It is these and their relation to primary work that Herbart especially takes up, thus completing the school course. This is also the work of Spencer while Basedow begins with the young children though from a different standpoint than that of Pestalozzi.

Herbart agreed with Pestalozzi in the opposition of the methods pursued by the Philanthropinists in their educational system. Their leader, Basedow, proposed that children needing some amusement in school to make learning more interesting than it would otherwise be, should be taught not only the multiplication tables and the structure of the human body but should have in addition to these, interesting facts of geography, mythology, fables and stories of history.

The aim of Herbart and his master was to discover such a logical and proper sequence of studies as would not necessitate arousing the interest by such entertainment. Spencer, who is a strict Pestalozzian, also seeks this natural sequence, or rather the relative worth of different studies, but both he and Herbart advance beyond Pestalozzianism. Their aims are the same and the final results are very similar but their methods of attaining these ends are wholly different. Basedow has no such aim because in his method there is much less need of such a sequence.

Herbart divides all learning into two classes. That division re-



lating to an increase in physical comfort and welfare may include manufactures, commerce, and agriculture; while for moral and mental development we have religion, ethics, and the duties to family, state, and society. Spencer makes a fivefold division of the studies required for the activities of human life: 1, the education which prepares for direct selfpreservation; 2, that which prepares for indirect selfpreservation; 3, that which prepares for parenthood; 4, that which prepares for citizenship, and 5, that which prepares for the miscellaneous refinements of life. We see from this division that Spencer's first and second classes coincide with the first of Herbart's, and his remaining four with the last of Herbart's.

While these educators believe that a firm foundation for a complete and thorough knowledge may be gained in school, they do not believe that we should expect the complete knowledge itself to be gained there. Only the most important facts should be taught in schools, leaving details and the more unimportant facts to be learned by experience. To learn a trade one must go to a master in that trade; to form the moral nature one must spend an entire lifetime. The Philanthropinists want the school course to consist not only of what is absolutely necessary for a firm foundation on which to build the experiences of later life, but also of as many details and interesting facts as possible concerning various subjects.

Pestalozzi wished all education to be drawn from the child's environment, from man and from nature, and his method was to teach by a constant use of object lessons. Herbart, too, thought nature was the important source of knowledge but to teach by intuition was his method. The difference between these methods is that by the object lesson plan particular attention is given to teaching a certain number of objects with the thought directed more to the number learned than to the effect they produce on the child's mind. The intuitive method leads to the study of the child itself, to discover what objects are most necessary to that child. Spencer believed that a proper study of the sciences would give the desired results.

Let us see to what extent the study of nature is taken up in our colleges and high schools. The sciences which make up a large part of the curriculum in these schools, are studies about the same Nature of which the child learns something in the primary schools. History, too, is a study of Nature, for what is man but the highest form of the development of Nature?

Spencer seriously opposes the study of history as it is usually pursued, although if the correct method be used, he maintains that much may be learned from it concerning the duties of citizenship. He says that the learning of names of generals or battles or the dates of different reigns is of small value; that they are learned chiefly because



it is fashionable, and that what really constitutes history is something only recently introduced into the study. "Only now, when the welfare of nations rather than of rulers is becoming the dominant idea, are historians beginning to occupy themselves with the phenomena of social progress." But these data are necessary in the primary grades to form the foundation for the study of the laws of sociologic progress in secondary instruction.

Furthermore when we study history and the sciences we are following the laws of Pestalozzi as put into practice by Herbart. Spencer lays much stress on these laws which he discusses at length in his "Education." These six laws are: 1, we should progress from the simple to the complex; 2, from the concrete to the abstract; 3, according to the culture epochs; 4, from the empirical to the rational; 5, we should encourage self-development; 6, interest should be aroused. Of these the third is the most important, being in fact, the foundation of the others. The culture epochs theory is that the development of the human mind is divided into epochs just as is the mind development of the race, and that the individual mind progresses in the same way as does that of the race, only far more rapidly and with some modifications caused by personal environment.

In the studies mentioned above, we look first at that which lies nearest us and then bring the more remote into close connection with

the already assimilated facts. Again, the child begins with the simple facts and ideas and from these passes to the complex made up of the simple, seeing the world as a complex whole rather than as an impenetrable labyrinth of unconnected ideas. Such an idea of the world is very different from that which would be gained by a child under Basedow's training, with the course of study made up, as Herbart describes it, "of a little natural history, a very little geography, a few sketches from history, a few little anecdotes of noble characters, great men, and nice children; in addition, a little revolutionary political morality, now and then an Aesopian fable, a few lucid exercises in the use of grammatical cases, a few names of constellations, ancient gods, and chemical preparations, now and then a conundrum, a bon mot, or an example in arithmetic." With such a conglomeration a child just beginning to learn would be at a loss to know the relation existing between any of his studies and as a consequence would remember very little.

Following the Herbartian method, the student in history begins with the simplest forms of government existing in ancient times and advances gradually to the more complex forms, constantly trying to discover how the new developed out of the old. The objection may be raised that when we begin the study of history with the earliest forms of government we do not go from the known to the unknown, for it is generally supposed that the workings of our own government are those most familiar to us. If we look at the question a little more care-



fully, however, we will find that a large per cent of even adult citizens of this country know comparatively little concerning the real government of the nation; and to the younger members of our Union, the judicial, executive and legislative departments form an inexplicable mass of details. But every one knows well the system of government in the individual family, and this was the basis of the patriarchal system. At first the state was a single family under the absolute control of the father; as the family grew larger the oldest man in the community continued as chief; as the population increased, assistants were necessary, and the government became more complex. This complexity finally culminated in our modern governments, each modified from an earlier form to suit the character of the people making up the nation. For an illustration of this increasing intricacy, let us make a brief outline of the growth of the judicial system from which we may form some conception of the development of other branches of government. In earlier times, each man was his own judge; then this duty devolved upon the patriarch of the tribe; later this office was shared with his counselors; finally, as demand increased and more judges were needed, separate courts were brought into existence, each with its special jurisdiction over particular classes of cases. To understand the complex judicial system as we have it today, one must know what were the reasons for its establishment, and to do this, a knowledge of the earliest and simplest

forms of the system must be had.

As we must go back to earliest times for a basis for the judicial system, so we must get the foundation for our knowledge of other parts of history from the same source. Seeing that this was the natural method of procedure for the work in this subject, Herbart began the study of history with the Homeric poems, which deal exclusively with life under the patriarchal government in Greece. Although at the present time we do not use these poems, nevertheless we begin the study of history with this period.

Another branch of education which was considered by Herbart to be of prime importance is mathematics. Spencer, too, gives it a very prominent place in his course of study. Arithmetic has always been taught in common schools while algebra is found in high schools, but beyond this, mathematics has hitherto been sadly neglected. Now, however, we find the subject forcing itself into a place in all grades of schools more fitting to its importance. Geometry and trigonometry are entering the curricula of the grammar schools and with good reason, for all the objects of nature are based on geometrical figures more or less modified. By the study of geometry, aside from its practical uses, the student will be more susceptible to the beauties of nature than without this training. Pestalozzi used the quadrangle as the basis for the study of form and position, but Herbart suggests the substitution of



the triangle for this purpose as being more simple and more common. This basis would demand trigonometry as an early acquirement. Mathematics being the basis of all scientific work, should be so wrought out and applied pedagogically as to be helpful in all other studies.

Spencer in "Education" brings out very forcibly the great importance of mathematics. He of course recognizes the application of mathematics in trade and commerce where every producer and consumer must, in self-protection, understand the rules of arithmetic. But there are other less familiar and yet important cases demanding the application of mathematical principles. The work of the civil engineer is based on mathematical computations as is also that of the architect and builder. In building a railroad, mathematics is required in determining the direction of the track, in grading the roadbed, in building bridges, tunneling, in building engines and cars, et cetera. The success of the builder depends on his accuracy in determining the sustaining powers of different materials and in laying true foundations; in fact, in every step of the undertaking mathematical calculations give him the required correctness. If it were not for a knowledge of mathematical principles we would have little or no machinery and would be brought to the condition of the rudest savage.

While Pestalozzi taught only the most useful facts, Herbart saw the advantage of aiming in higher education at something beyond these mere

necessaries. Spencer saw the desirability of the higher culture or as he says, "the miscellaneous activities which make up the leisure part of life, devoted to the gratification of the tastes and feelings," but he does not amplify his statement. These activities should not be allowed to usurp the time necessary for the more substantial work, but it is very important to satisfy as far as possible the desire for higher culture. In fact, these desires and our capability of satisfying them, measure the civilization of the race, which increases with every advance in culture studies. Basedow opposed Pestalozzi's narrow horizon, and to give a broader outlook, he adopted the method upheld by the Philanthropinists. While Herbart's final aim was similar to Basedow's he sought a more logical way of fulfilling it.

History as it is generally taught and the greater part of geography, studies usually considered of prime importance, may be classed with the ornamental branches of education as they were under the Philanthropinists. We study them chiefly because it is the custom and not because the facts will ever be particularly useful to us in our working lives. Through these branches, however, we gain broader views of life, we learn our relations to other parts of the world; are influenced by the manners and customs of other nations and from them learn to enjoy new luxuries and are enabled to satisfy old wants. The greatest benefit derived from them is a broader view of justice and morality,



and a desire for improvement not only intellectually and morally but in business relations.

The aim of Pestalozzi was to discover the true sequence of studies; to find such an arrangement of the important branches of education that at any given time the child shall be learning that which is of greatest value and interest to him, and that each fact learned shall be connected by apperception to all knowledge previously gained. Spencer says that our present system of teaching does not consider the logical sequence of studies but usually puts them in an abnormal order. For example, political geography is taught in the early grades while physical geography is left much later or is omitted altogether. The natural method would be to teach small children physical geography which is comprehensible and comparatively attractive to a child and let the political geography come after he has a broader foundation on which to build the intricate facts. In drawing also, the order of work is not good. A child is more interested in color than in form and notices color more accurately than he does shape. For this reason his first lessons in drawing should be in color which would lead finally to a true idea of shape and size.

The natural sequence should also be found for the ornamental studies for to a well-educated person a perfect understanding of them is as important as the primary facts. It is a lack of concentration and

apperception of known facts that causes the mistakes frequently found in the work of sculptors, painters and other artists. A sculptor must have a thorough knowledge of the sciences to be successful; otherwise, his figures will be poorly proportioned and will be represented in positions impossible to be sustained in reality. A musician must unite mathematical accuracy with skillful execution to give a pleasing effect to his musical production. For the untalented mass, moreover, these conditions must be fulfilled to give an understanding and appreciation of art and the higher culture at which every one aims.

But to discover the true sequence, one must understand the laws of mind development, for only by these laws can one know for what the mind is fitted at a given time. This includes the discussion concerning the extent to which education effects the mental development, which has already been discussed. In whatever way we look at this question, however, it will generally be conceded that the child develops mentally very much as does the race through many generations, except that while the race passed through each stage slowly and with many backward steps, the child rises rapidly from the lowest mental condition, passing it may be, some of the stages, until a high development is reached. This result varies in different children because of different surroundings just as races are unlike because of dissimilar environments.

In connection with this sequence, imagination and an investigative spirit should be aroused, for in higher education they are very import-



ant. One application of these factors in education is in astronomy. Astronomers can predict with positive accuracy what will take place among the heavenly bodies at any given time because of what occurred under similar conditions at other times. For instance, the presence of a new moon or planet can be foretold perhaps many years before its actual discovery, this being ascertained by the fact that the orbit of some planet is altered, and such a change always signifies the appearance of a new factor in the solar world. In the early ages, astronomers knew what was to take place, by experience but without understanding the reasons for the occurrences; at this stage the science was empirical. Later on, after certain events had taken place with the same attending circumstances, laws were formulated inductively in accordance with the occurrences. It is only in recent times that philosophic science has been established. This science is based on truths discovered by different scientists, which have clarified many mysteries of early investigation. What is true of this science is true of all others; that is, there have been three stages of development, the empirical, the inductive, and the philosophic.

Historians also make constant use of imagination and investigation in working out the history of a country whose records are few and scattered. From the study of a country whose historical records are complete we find that history repeats itself; in other words, events

take place in a logical order and then are repeated in the same order, though with such modifications as the progress or decline of the nation demands. This sequence of events holds for other countries also. From this it appears that if we have the history of a country whose records are missing for several years at different periods, we may complete the history of the nation by the comparison of a series of events in the complete history with a partial series of the other history, and taking into consideration the difference in national characteristics. Or it may be that in a country one series of events is complete and another is incomplete. In this case, to complete the record, the two series would be compared and allowance made for the progress of civilization between the two periods of history under discussion. Indeed, it is impossible to ascertain the details of this intervening history, but the principal events may be determined with comparative accuracy.

Imagination and investigation are employed also in the study of evolution and geology as well as in many other subjects. But further explanation is unnecessary to point out the importance of imagination in scientific research, which would often be fruitless without the aid of the imaginative power.

To summarize the principal thoughts in this discussion: Spencer while a strict Pestalozzian, in seeking the logical sequence of studies judges the sciences to be of prime importance, and desires to have man



a "perfect animal". Herbart advances beyond Pestalozzi and has in great part given the coming school system its foundation. Both he and Pestalozzi sought the sequence of studies parallel to the "culture epochs" of the race; Pestalozzi's aim being to enable the masses to make a better living, while Herbart desired to bring about the higher culture of all classes of society.. The method pursued by the three educators in gaining their end was; advance from the simple to the complex, from the known to the unknown. They advocated that all instruction should be sought from nature, every new fact should be connected with all previous knowledge, - that every part of education should be assimilated and connected by apperception.

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